

ABSTRACT

The invention relates to a method for manufacturing low PMD single-mode fiber and a fiber manufactured by said method. The twisting system is mounted at the downstream side of a normal fiber-drawing tower. The manner of twisting does not change the fiber-drawing path, the axis of twisting wheels periodically swing in a plane which is parallel to the fiber-drawing direction. The fiber moving at high speed makes the outer surfaces of the twisting wheels to rotate round the axis of the fiber, when an angle between the plane in which the twisting wheels are located and the fiber-drawing direction exists, the component of the angular velocity in the radial direction of the fiber reacts on the fiber and makes the fiber to twist, and the twist propagates to the soften region of the glass material at the fiber-drawing upstream in the form of mechanical wave, a plastic deformation is produced and set up in the newly drawn fiber. The non-sinusoidal twist distribution of confused frequencies and amplitudes is introduced in the length direction of the fiber, and the energy coupling between the two orthogonal polarization modes is increased, the birefringence of said modes initiates PMD of the fiber. The PMD coefficient of the fiber manufactured by the method is less than $0.03 \text{ ps/km}^{1/2}$.